

-- REMARKS --

The present amendment replies to an Office Action dated December 19, 2006.

Claims 1-20 are currently pending in the present application. Claims 13-20 have been withdrawn. In the Office Action, the Examiner rejected claims 1-12 on various grounds. The Applicant responds to each ground of rejection as subsequently recited herein and requests reconsideration of the present application.

35 U.S.C. §103 Rejections

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references when combined must teach or suggest all the claim limitations. See MPEP 2143. To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). See MPEP 2143.03. The Applicant respectfully asserts that the cited references fail to teach or suggest all the claim limitations.

A. Claims 1 and 6 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,603,909 to Varner (the *Varner* patent) in view of Becker, et al. (the *Becker* publication) [Erbium Doped Fiber Amplifiers and Technology, 1999].

The Applicant respectfully asserts that the *Varner* patent and the *Becker* publication, alone or in combination, fail to teach or suggest all the claim limitations of the rejected claims. The *Varner* patent fails to disclose, teach, or suggest an optical switch including a substrate, a loss element having a signal loss, and a rare earth doped gain element operable to produce a signal gain, in which the signal gain and the signal loss are about equal, and the loss element and rare earth doped gain element are supported on the substrate, as recited in amended independent claim 1. The *Becker* publication also fails to disclose, teach, or suggest these limitations.

Claim 6 depends directly from independent claim 1 and so includes all the elements and limitations of independent claim 1. As discussed above, the *Varner* patent and the *Becker* publication, alone or in combination, fail to teach or suggest an optical switch including a substrate, a loss element having a signal loss, and a rare earth doped gain element operable to produce a signal gain, in which the signal gain and the signal loss are about equal, and the loss element and rare earth doped gain element are supported on the substrate. Because claim 6 depends from and incorporate the elements of independent claim 1, claim 6 is allowable over the *Varner* patent and the *Becker* publication, alone or in combination.

Withdrawal of the rejection of claims 1 and 6 under 35 U.S.C. §103(a) as being unpatentable over the *Varner* patent in view of the *Becker* publication is respectfully requested.

B. Claims 2-3, 7-8, and 12 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,603,909 to Varner (the *Varner* patent) in view of Becker, et al. (the *Becker* publication) [Erbium Doped Fiber Amplifiers and Technology, 1999], and further in view of U.S. Patent No. 5,475,528 to LaBorde (the *LaBorde* patent).

The Applicant respectfully asserts that the *Varner* patent, the *Becker* publication, and the *LaBorde* patent, alone or in combination, fail to teach or suggest all the claim limitations of the rejected claims.

Claims 2-3, 7-8, and 12 depend directly or indirectly from independent claim 1 and so include all the elements and limitations of independent claim 1. As discussed in Section A above, the *Varner* patent and the *Becker* publication, alone or in combination, fail to teach or suggest an optical switch including a substrate, a loss element having a signal loss, and a rare earth doped gain element operable to produce a signal gain, in which the signal gain and the signal loss are about equal, and the loss element and rare earth doped gain element are supported on the substrate. The *LaBorde* patent also fails to disclose, teach, or suggest these elements.

Because claims 2-3, 7-8, and 12 depend from and incorporates the elements of independent claim 1, claims 2-3, 7-8, and 12 are allowable over the *Varner* patent, the *Becker* publication, and the *LaBorde* patent, alone or in combination.

Regarding claims 2 and 7, the Abstract of the *LaBorde* patent cited by the Examiner discloses glass doped with up to 5 weight % erbium oxide, not the core being doped with at least one species of rare earth ion in the range of 5 to 75 wt% as recited in claim 2 and 7. The Applicants respectfully disagree with the Examiner's conclusion that glass doped with up to 5 weight % erbium oxide in the *LaBorde* patent is in the claimed range 5 to 75 wt%. The *LaBorde* patent itself argues against expanding the doping range to 5 wt%. The *LaBorde* patent states that "it is apparent that lifetimes above 8 milliseconds can be obtained with an erbium loading of up to about 3 %. It has been found that glasses doped with amounts of erbium greater than about 3 weight % tend to quench, that is undergo a condition which greatly reduces the excited-state lifetime." See column 5, lines 35-42. The excited state lifetime falls off rapidly, with the excited state lifetime at 5 weight % being half the excited state lifetime at 3 weight %. See Fig. 1. Therefore, the *LaBorde* patent fails to support and teaches against a core doped with at least one species of rare earth ion in the range of 5 to 75 wt% as claimed.

Withdrawal of the rejection of claims 2-3, 7-8, and 12 under 35 U.S.C. §103(a) as being unpatentable over the *Varner* patent in view of the *Becker* publication and further in view of the *LaBorde* patent is respectfully requested.

C. Claims 4 and 9-10 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,603,909 to Varner (the *Varner* patent) in view of Becker, et al. (the *Becker* publication) [Erbium Doped Fiber Amplifiers and Technology, 1999], and further in view of U.S. Patent No. 6,430,349 to Hayden (the *Hayden* patent).

The Applicant respectfully asserts that the *Varner* patent, the *Becker* publication, and the *Hayden* patent, alone or in combination, fail to teach or suggest all the claim limitations of the rejected claims.

Claims 4 and 9-10 depend directly or indirectly from independent claim 1 and so include all the elements and limitations of independent claim 1. As discussed in Section A above, the *Varner* patent and the *Becker* publication, alone or in combination, fail to teach or suggest an optical switch including a substrate, a loss element having a signal loss, and a rare earth doped gain element operable to produce a signal gain, in which the signal gain and the signal loss are about equal, and the loss element and rare earth doped gain element are supported on the substrate. The *Hayden* patent also fails to disclose, teach, or suggest these elements. Because claims 4 and 9-10 depend from and incorporates the elements of independent claim 1, claim claims 4 and 9-10 are allowable over the *Varner* patent, the *Becker* publication, and the *Hayden* patent, alone or in combination.

Withdrawal of the rejection of claims 4 and 9-10 under 35 U.S.C. §103(a) as being unpatentable over the *Varner* patent in view of the *Becker* publication and further in view of the *Hayden* patent is respectfully requested.

D. Claims 5 and 11 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,603,909 to Varner (the *Varner* patent) in view of Becker, et al. (the *Becker* publication) [Erbium Doped Fiber Amplifiers and Technology, 1999], and further in view of U.S. Patent Publication No. 2002/0030881 to Nilsson (the *Nilsson* application).

The Applicant respectfully asserts that the *Varner* patent, the *Becker* publication, and the *Nilsson* application, alone or in combination, fail to teach or suggest all the claim limitations of the rejected claims.

Claims 5 and 11 depend directly or indirectly from independent claim 1 and so include all the elements and limitations of independent claim 1. As discussed in Section A above, the *Varner* patent and the *Becker* publication, alone or in combination, fail to teach or suggest an optical switch including a substrate, a loss element having a signal loss, and a rare earth doped gain element operable to produce a signal gain, in which the signal gain and the signal loss are about equal, and the loss element and rare earth doped gain element are supported on the substrate. The *Nilsson* application also fails to disclose, teach, or suggest these elements. Because claims 5 and 11 depend from and incorporates the elements of independent claim 1, claim claims 5 and 11 are allowable over the *Varner* patent, the *Becker* publication, and the *Nilsson* application, alone or in combination.

Withdrawal of the rejection of claims 5 and 11 under 35 U.S.C. §103(a) as being unpatentable over the *Varner* patent in view of the *Becker* publication and further in view of the *Nilsson* application is respectfully requested.

E. Claim 21 has been added.

Claim 21 has been added herein to more particularly point out and distinctly claim the Applicants' invention. Claim 21 is allowable over the cited references for at least the reasons discussed above for its respective independent claim 1. No new matter has been added with the inclusion of claim 21, which are supported in the specification at least on pages 3-5.

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**--SUMMARY--**

Reconsideration of the rejection of claims 1-12 and consideration of claim 21 is requested in light of the remarks herein. The Applicant submits that claims 1-12 and 21 as set forth fully satisfy the requirements of 35 U.S.C. §§102, 103, and 112. In view of foregoing remarks, favorable consideration and early passage to issue of the present application are respectfully requested.

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Respectfully submitted,

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